DOCUMENT RESUME

ED 286 861 SP 029 428

AUTHOR Anderson, Linda M.; And Others
TITLE Classroom Task Environments and Students' Task-Related Beliefs. Research Series No. 184.
INSTITUTION Michigan State Univ., East Lansing. Inst. for Research on Teaching.
SPONS AGENCY Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE Sep 87
NOTE 35p.
AVAILABLE FROM Institute for Research on Teaching, College of Education, Michigan State University, 252 Erickson Hall, East Lansing, MI 48824-1034 ($3.25).
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Classroom Environment; Elementary Education; *Student Attitudes; Teacher Behavior; Teacher Student Relationship; *Teaching Methods; *Teaching Styles

ABSTRACT

Students must learn to respond to the task demands imposed by their teachers, and their ability to do so is influenced by certain task related beliefs. The study described the nature of classroom task environments and their relationship to students' task-related beliefs. Students in 19 third- and fourth-grade classrooms completed questionnaires about self-competence, sense of control over outcomes, and intrinsic value of school tasks. These scores were used to identify classrooms where students held more or less desirable patterns of beliefs, and then qualitative descriptions of these classrooms were examined. Two dimensions of teachers' practices were associated with more desirable patterns of student beliefs. These were the extent to which teachers structured information about the environment to render it predictable and comprehensible and the frequency of opportunities for students to regulate their own task activity. Results are discussed in terms of the importance of beliefs about environmental contingencies as foundational to other important beliefs. Case descriptions of two teachers are presented to illustrate these results. (Author)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

Research Series No. 184

CLASSROOM TASK ENVIRONMENTS AND STUDENTS' TASK-RELATED BELIEFS

Linda M. Anderson, Dannelle D. Stevens, Richard S. Prawat, and Jacquelyn N. Nickerson

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it

☐ Minor changes have been made to improve reproduction quality

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

L. Anderson

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Research Series No. 184

CLASSROOM TASK ENVIRONMENTS AND STUDENTS' TASK-RELATED BELIEFS

Linda M. Anderson, Dannelle D. Stevens,
Richard S. Prawat, and Jacquelyn N. Nickerson

Published By

The Institute for Research on Teaching
College of Education
Michigan State University
East Lansing, Michigan 48824-1034

September 1987

This work is sponsored in part by the Institute for Research on Teaching, College of Education, Michigan State University. The Institute for Research on Teaching is funded from a variety of federal, state, and private sources including the United States Department of Education and Michigan State University. The opinions expressed in this publication do not necessarily reflect the position, policy, or endorsement of the funding agencies.

Institute for Research on Teaching

The **Institute for Research on Teaching** was founded at Michigan State University (MSU) in 1976 by the National Institute of Education. Following a nationwide competition in 1981, the NIE awarded a second five-year contract to MSU. Funding is currently received from the U.S. Department of Education, Michigan State University, and other agencies and foundations for individual research projects.

The IRT conducts major research projects aimed at improving classroom teaching, including studies of classroom management strategies, student socialization, the diagnosis and remediation of reading difficulties, and teacher education. IRT researchers are also examining the teaching of specific school subjects such as reading, writing, general mathematics, and science and are seeking to understand how factors outside the classroom affect teacher decision making.

Researchers from such diverse disciplines as educational psychology, anthropology, sociology, and philosophy cooperate in conducting IRT research. They join forces with public school teachers who work at the IRT as half-time collaborators in research, helping to design and plan studies, collect data, analyze and interpret results, and disseminate findings.

The IRT publishes research reports, occasional papers, conference proceedings, a newsletter for practitioners, and lists and catalogs of IRT publications. For more information, to receive a list or catalog, and/or to be placed on the IRT mailing list to receive the newsletter, please write to the IRT Editor, Institute for Research on Teaching, 252 Erickson Hall, Michigan State University, East Lansing, Michigan 48824-1034.

Co-Directors: Jere E. Brophy and Andrew C. Porter

Editor: Sandra Gross

Abstract

Students must learn to respond to the task demands imposed by their teachers, and their ability to do so is influenced by certain task-related beliefs. The study described here examined the nature of classroom task environments and their relationship to students' task-related beliefs. Students in 19 third- and fourth-grade classrooms completed questionnaires about self-competence, sense of control over outcomes, and intrinsic value of school tasks. These scores were used to identify classrooms where students held more and less desirable patterns of beliefs, and then qualitative descriptions of those classes were examined. Two dimensions of teachers' practices were associated with more desirable patterns of student beliefs. These were the extent to which teachers structured information about the environment to render it predictable and comprehensible and the frequency of opportunities for students to regulate their own task activity. Results are discussed in terms of the importance of beliefs about environmental contingencies as foundational to other important beliefs. Case descriptions of two teachers are presented to illustrate the results.

CLASSROOM TASK ENVIRONMENTS AND STUDENTS' TASK-RELATED BELIEFS[1]

Linda M. Anderson, Dannelle D. Stevens, Richard S. Prawat,
and Jacquelyn Nickerson[2]

This paper describes the environment in which school tasks are done and how that environment may influence students' beliefs that underlie independent and onfident performance on school tasks. Tasks were considered to be teacher-established goals for students' physical or mental activity, especially academic assignments but also including expectations for conduct. Within any classroom, demands are imposed upon children to perform tasks according to acceptable standards; part of learning to fulfill the student role is learning how to respond to task demands.

A key assumption of the Socialization Outcomes Project, from which these results are drawn, was that students are better able to meet the task demands of school when they hold certain beliefs about themselves and tasks. This assumption is supported by much research about the links between student beliefs and school achievement. For example, Doyle (1983), Weinstein (1983), and Wittrock (1986) review research that demonstrates how students mediate instruction and interpret tasks according to preexisting beliefs about themselves, teachers, learning, and tasks.

In the study described here, three sets of task-related beliefs were considered to be important mediators of students' efforts and performance in school: beliefs about self-competence in academic domains, beliefs about

---

[1]This paper will appear in a special issue of The Elementary School Journal concerning school tasks and ways that students perform them.

[2]Linda Anderson, co-coordinator of the Socialization Outcomes Project, is an associate professor of teacher education at Michigan State University. Dannelle Stevens is a research assistant with the project. Richard Prawat and Jacquelyn Nickerson are also co-coordinators with the project. Prawat is a professor and Nickerson an associate professor of teacher education at MSU.

control over success and failure, and beliefs about the intrinsic value of performing school tasks in an independent manner. Each of these beliefs has been investigated by Susan Harter and her colleagues (Connell, 1985; Harter, 1981a; Harter & Connell, 1984), who have concluded that these beliefs are precursors to achievement in school. In Harter's words, a child with "quintessential mastery motivation" might hold these beliefs: "I enjoy the mastery process (I'm intrinsically motivated to master), the product is successful (I'm competent), I know why it happened, who is in control, and that person is me, (I'm primarily responsible)" (p. 248).

Other research on children's self-perceptions and motivation supports Harter's line of reasoning, especially regarding the importance of beliefs about what controls performance outcomes (e.g., Dweck, 1986; Skinner & Connell, 1986; Wang, 1982). However, this work has not systematically examined the role of school experiences in the development of critical task-related beliefs.

Therefore, the hypothesis investigated in the study was that classroom task environments, as established and maintained by the teacher, would be related to the development of students' task-related beliefs. Aspects of task environments that were studied included the norms surrounding task accomplishment, the social and procedural systems within which tasks are imbedded, and teacher communication to students about standards for performing tasks and how, when, and why those standards should be met. Although the task environment evolves over time and is influenced by students' responses to tasks, the teacher is a primary determinant of the task environment and the person most responsible for ensuring that students learn how to meet the demands of a particular classroom.

Methods

Data reported in this paper are taken from the Socialization Outcomes Project (Anderson & Prawat, 1986). Only data about third- and fourth- grade students' task-related beliefs are reported here. The larger study also examined teachers' socialization priorities and students' beliefs about peers and social relationships.

Sample

Teachers. The teachers in this study were selected to represent a range of socialization priorities. Initially, 108 third- and fourth-grade teachers completed a questionnaire about the socialization goals they held for their students (Prawat, Anderson, Anderson, Jenkins, & Anderson, 1983). The questionnaire included 30 forced-choice items reflecting different socialization priorities including teaching content, teaching students to meet task demands, and teaching students to meet interpersonal demands. Teachers' preferences for each scale could range from 1 to 22, and teachers who had high scores (above 14) for each scale were identified and asked to participate in the study. The wide range of priorities increased the chances that the sample would represent a variety of teacher socialization practices. A sample of 24 teachers agreed to participate in the observational portion of the study, representing equal numbers who held each of the three priority areas and a group of teachers with balanced priorities. Of these 24 teachers, 19 taught either third or fourth grade during the year of observation, and these 19 teachers' classrooms are the focus of the study reported here.

Students. Within 19 third- and fourth-grade classes, all students who received parental permission were given three measures of task-related beliefs, although analyses were based only on students who had been present for both fall and spring measurement. The schools attended by these students

were all located in a midwestern urban school district, where socioeconomic status (SES) of the schools was measured by the percent of students from families not receiving Aid for Dependent Children (AFDC), ranging from a low of 52% to a high of 92%. The higher end of this SES scale does not necessarily reflect high levels of parental income and education, only that parents were not receiving public assistance. The schools drew students from working-class and middle-class homes, and were either integrated by means of busing or drew students from integrated neighborhoods.

Measures

Measures of students' task-related beliefs. Three questionnaires were used to tap students' task-related beliefs. These three instruments were based on work by Susan Harter and James Connell on student beliefs that are related to school achievement (Harter & Connell, 1984). Their analyses led them to conclude that students' task-related beliefs, especially beliefs about what causes success and failure, are precursors to achievement. Their instruments contain parallel items about academic and social outcomes, which made them appropriate for the larger project. In this paper, only scales that directly tap task-related beliefs are discussed.

The three questionnaires were as follows:

a. *"Why things happen"* (Connell, 1985), a measure of beliefs about control over academic outcomes. Students indicated degree of agreement with items that described the causes of school successes and failures. This measure yielded three subscales shown to be related to student achievement and achievement motivation: unknown control (belief that outcomes do not have explainable causes), internal control (belief that one is personally

responsible), and powerful others control (belief that others, especially the teacher, are most responsible for outcomes).

b. *"What I am like"* (Harter, 1982), a measure of self-perceived academic competence. Students indicated which of two types of students they were most like and then indicated the degree of similarity within the selected type (e.g., "Some students never have any trouble getting their work done on time, but other students often have trouble finishing their work").

c. *"In the classroom"* (Harter, 1981b), a measure of preference for situations involving intrinsic versus extrinsic motivation. Within this instrument, two subscales were used: independent mastery (preference for self-selection of classroom activities, even if challenging) and independent criteria (beliefs that one can adequately judge the quality of one's own performance).

Measures of classroom task environment. All classrooms were observed by a research staff member who did not participate in class activities. Observations began on the first or second day of school, and at least four half-day observations were conducted before the end of the third week of school. During the winter, there were at least six half-day visits, and during the spring there were four half-day observations. During the visits, observers focused on the teacher (during the fall and spring) or selected students (during the winter). In addition to the observations, teachers were interviewed about their classroom policies and decisions.

Observers were trained to write running narrative descriptions of classroom events, noting the predominant teacher and student activities and the general tone of events, and focusing especially on classroom practices and teacher communication that might constitute socialization efforts, such as references to norms, standards, rationales, consequences, strategies, and affect related to students' learning about task and interpersonal demands in that particular classroom. Observers did not note details about the academic content of instruction, only the form and procedural requirements of tasks. Before visiting classrooms, observers were trained over a three-day period, using videotapes. As they viewed the tapes, they practiced writing narratives, using a set of guiding questions.

Data Analyses

Analysis of students' task-related beliefs. Data from six separate subscales from the three measures were available for all students. These six were considered together as a composite score of task-related beliefs. The researchers were interested in identifying classrooms where there were generally desirable or less desirable changes in student beliefs, rather than identifying aspects of task environments that supported growth of one belief but not another; that is, there were some classrooms where average student beliefs changed on several or all scales and other classrooms where beliefs changed on only a few scales or none. The researchers wanted to identify those classes that had generally positive or negative change on most scales Therefore, a composite measure was deemed appropriate for addressing this research question.

Originally, plans were to administer each measure of task-related beliefs as early as possible in the fall, in order to use the fall scores as indicators of entering student beliefs that could be used as covariates in an

analysis of changes in belief scores. Such an analysis would have allowed selection of classrooms where changes in students' beliefs from fall to spring reflected more or less desirable patterns. Then, the narratives of these classrooms could be examined for clues about how the environment might have contributed to changes in student beliefs. However, the school district did not allow any student measurement until mid-October after statewide achievement tests had been completed. This meant that the "pretests" were not given until six weeks after the school year began.

This delay meant that the fall scores could not be treated as true indicators of student entering beliefs. In fact, Deci, Schwartz, Sheinman, and Ryan (1981), using some of the same measures of student beliefs employed in the present study, found that students' beliefs changed significantly by the seventh week of school and these changes were associated with the teacher's socialization beliefs. Thus, there was reason to believe that any classroom or teacher effects on student beliefs might have occurred before the pretest. However, it was also certainly possible that a classroom or teacher might affect students' beliefs, but that effect might not be detectable until later in the year. For these reasons, it was inappropriate to use either a traditional covariance analysis or to use the unadjusted fall or spring scores by themselves.

Therefore, an alternative method for examining the student belief scores was devised and used as the basis for selecting classrooms for further analysis. This was accomplished by considering each classroom's relative placement in the fall and spring and assessing the desirability of the pattern of change across the year. This was accomplished by, first, converting classroom means into z-score units, representing the distance from the mean of all classrooms.

Then, a scoring system was devised so that each classroom received a rating for the desirability of change between the fall and spring for class means on the task-related scales. Desirable change on a given scale was defined as either of the following conditions: (a) Both fall and spring standard scores were at least .5 standard deviation units away from the mean in a desirable direction, or (b) there was a change of at least .5 standard deviation units in a desirable direction.

Six task-related scales taken from the Harter and Connell instruments were considered together in rating a classroom. Desirable change was defined as lower scores on the "unknown control" scale and the external control scale and higher scores on internal control, perceived competence, independent mastery, and independent criteria scales. Then, composite scores were created with a five-point scale, called the Composite Rating of Students' Task-related Beliefs. The rating was anchored in this manner: A 5 was assigned when there were clearly desirable changes or maintenance of desirable levels for all scales; a 3 was assigned when the pattern was mixed; and a 1 was assigned when there was a clearly consistent undesirable pattern. The mean rating on this scale for the 19 third- and fourth-grade teachers was 3.14 with a standard deviation of 1.29.

Although there were decision rules for rating the classes, some judgment was required of the rater when applying this system. In order to eliminate any knowledge of the classrooms by the rater, a set of tables containing fall and spring standard scores were prepared with teacher identification recoded by a person outside the project. Then the order of the tables was shuffled. Thus, the composite ratings of student beliefs were based on sets of numbers with no links to classroom identity.

One person rated the data twice, shuffling the data sheets in between the ratings. For about half of the classrooms, six weeks intervened between first and second ratings, so that memory of the original ratings was highly unlikely. First and second ratings were correlated highly ($r = .98$, $p<.01$), probably reflecting the specificity of the decision rules.

Analysis of classroom observations. Researchers who had no knowledge of the student belief scores read narrative descriptions of all classrooms and performed two types of analyses: ratings of general features of the task climate and development of case descriptions that focused more specifically on ways that teachers communicated with students.

Ratings of classroom climate. The research team read several sets of narratives in order to hypothesize what ratable features of classrooms might predict differences in students' task-related beliefs. This reading was guided by other socialization literature and by research on classroom climate and on teaching effectiveness. The resulting set of rating scales described three general aspects of classroom climate that might affect students' beliefs about task performance. In order to rate classroom climate, pairs of readers read a selection of narratives for each classroom (two fall, two winter, and all four spring narratives.) Then the two raters assigned a score to the classroom for each of three five-point scales. The final rating for each classroom was the average of the two independent ratings. The three scales were as follows:

a. *Affective tone.* This scale reflected the general emotional tone in the classroom. A 5 was assigned when there was an overall positive "upbeat" tone and evidence of happy, comfortable relationships among teacher and students with frequent prosocial or cooperative interactions. A 3 was assigned to

classrooms that were pleasant though perhaps neutral in tone, with few instances of either bickering or cooperation and prosocial interaction. A 1 was assigned when narratives revealed clear instances of unpleasant feelings between students and/or between the teacher and students as expressed through bickering, physical aggression, sarcasm, insults, or taunting. On this scale, the two raters' original scores (before resolution of any differences) were correlated, $r = .91$, $p<.01$. The mean for 19 third- and fourth-grade classrooms was 3.3 with a standard deviation of 1.1. Scores ranged from 1 to 5.

b. *Task tone*. This scale reflected both the quality and quantity of work on academic tasks. A 5 was assigned when students and teacher were not only "on task" most of the time, but the tasks appeared to be "meaningful" (i.e., more than routine busywork) with frequent indications that the teacher and students believed that the work was worthwhile. A 3 was assigned to classrooms where task engagement was usually high, but most of the time the tasks appeared to be routine. Few indications were given that either the teacher or students saw the tasks as intrinsically important, although finishing the work was valued. A 1 was assigned to classrooms where there was much nonproductive time for both the teacher and students. Students and teacher seemed to be passing the time, with tasks almost incidental to their reasons for being in school. On this scale, the correlation between the two raters' original scores was $r = .87$ ($p<.01$). The mean rating for 19 third- and

fourth-grade classrooms was 3.2, with a standard deviation of 1.0. Scores ranged from 1 to 4.7.

c. *Self-regulation.* This scale measured the degree of student independence and initiative in carrying out classroom tasks and procedures. A 5 was assigned to classrooms where every narrative (except early fall observations) contained some clear evidence of students' self-regulated behavior (e.g., knowing when to line up to go to another class without teacher prompting, watching the clock to pace work, initiating housekeeping jobs without teacher reminders, independently carrying out procedures for finding assignments, checking work, and turning it in). A 3 was assigned to classrooms where there was occasional evidence of self- regulation, but most of the time the teacher prompted students to begin transitions, to turn in their papers, and to initiate their assigned housekeeping tasks. A 1 was assigned to classes where there was seldom any evidence of student self-regulation. This category included classes where the teacher controlled almost all student activity, and it also included classes where classroom life was so chaotic that there were no clear goals that could be accomplished by student initiative. On this scale, the correlation between two raters' original scores was $r = .85$ ($p<.01$). The mean for 19 third- and fourth- grade classrooms was 2.9, with a standard deviation of 1.0. Scores ranged from 1 to 4.7.

Other narrative analysis. In addition to this systematic rating of classrooms, a qualitative analysis was also conducted for most of the third- and fourth-grade narrative data. The result of this analysis was a series of

case descriptions organized around two dimensions described below. The first step in preparation of these case descriptions was for a team of the three principal investigators to read narratives from a few classrooms and then discuss their impressions of the classes and the mechanisms through which the task environments were established. (Some of the narratives had been written by one of the three principal investigators, but narratives were also written by other observers.) The first few classes discussed in this manner were selected because initial analyses of student belief scores suggested that the classes differed in the degree of student change from the beginning to the end of the year. Thus, some knowledge of student beliefs was available to persons reading the narratives early in the qualitative analysis, and this knowledge, combined with knowledge of the socialization literature, guided the readers' examination of the narratives.

After the three readers had considered about five classrooms and other socialization literature, they hypothesized that two dimensions of teaching practice were associated with the development of students' task-related beliefs: (a) the extent to which the teacher structured information that rendered the environment predictable and (b) the extent to which the teacher provided opportunities for students to self-regulate their task performance. These dimensions are discussed in more detail in a later part of this paper.

After these dimensions were specified, one of the principal investigators and another research associate began to read the narratives of the third- and fourth-grade classes in order to construct descriptions of the classes along the two dimensions. At this point, knowledge of student belief scores could have biased the qualitative analysis conducted by the one person who participated in both the initial review of the narratives (with knowledge of student outcomes in some classes) and the compilation of the case descriptions.

However, three safeguards ensured that any bias on the part of this person did not completely determine the patterns discerned in the narratives.

First, the research associate (who did not participate in the initial reading of narratives) had no knowledge of the student outcomes, and she independently read the narratives of several classes and wrote case descriptions that were then compared to the other person's impressions. Second, the actual measures of student outcomes used in the final analyses reported here were different from the measures used in the analyses used to select cases for initial review of the narratives. The initial analyses depended on a covariance analyses, later deemed to be inappropriate because of the timing of the fall measures. Thus, some classes that appeared to be "non-gainers" in the initial analyses (which were known to one of the persons writing case descriptions) were rated more favorably with the final analysis scheme (for which results were not known to the persons writing the case descriptions). Finally, there were classes included in the case description writing completely unknown to both of the writers, because these classes had been observed by others and had not been included in the initial group of classes analyzed for purposes of hypotheses formation.

Procedures for writing case descriptions were as follows: First, each narrative was read and marginal notes were made about any incidents that might illustrate either dimension. Then, a summary was written for each narrative for each dimension, using the incidents to exemplify the pattern perceived by the reader. Finally, summary impressions across all narratives were written, based on the reader's notes about the separate narratives. The brief case descriptions that appear later in this paper were based on these overall summaries and illustrate the kinds of examples that were highlighted by the readers.

Results

In this section, two types of results are reported. First, statistical analyses of the quantitative data are presented in order to address questions about relationships among student belief scores and systematic measures of the classroom task environment. Second, qualitative data in the form of case descriptions are reported in order to suggest the mechanisms through which teachers created and maintained task environments associated with more desirable student beliefs. Although none of the data support causal arguments, the qualitative data, when combined with the statistical results, suggest that teachers (and the socialization/instructional strategies they employed) did made a difference in their students' beliefs.

Statistical Analyses of Relationships Among Ratings

A series of statistical analyses were performed to determine how the three ratings of classroom climate were related to the composite ratings of students' task-related beliefs, taking into account grade-level and school-level socioeconomic status. In all but four cases, there was only one classroom per school in the sample so that SES, available only as a school measure, is treated here as a classroom-level variable.

The first analyses performed were correlations among all ratings and demographic variables. Socioeconomic status was associated with student beliefs, but grade level was not. However, the strength of this relationship varied depending on whether one particular class was included in the analysis. This class was an extreme outlier on all measures: SES, climate ratings, and the composite student beliefs rating. When this class was included in the analysis, the correlation between SES and student beliefs was positive and significant ($r = .61$, $p<.01$). This correlation was reduced when the outlier class was removed from the analysis ($r = .50$, $p<.05$). Thus, the classes with more

students from poorer homes had lower ratings for students' task-related beliefs, but the strength of this relationship varied with the sample.

The three climate scales were positively and significantly correlated with one another, with correlations ranging from .85 to .98. Therefore, in subsequent analyses, the three climate ratings were averaged and considered as a composite climate score. This composite measure was positively associated with the ratings of students' task-related beliefs, although, again, the relationship varied slightly depending on whether the outlier class was included. When all classes were considered, the correlation between climate and student beliefs was $r = .61$, $p<.01$. When the extreme outlier class was removed, the relationship was still positive and significant: $r = .51$, $p<.05$.

The significant correlations of both SES and climate with student beliefs raise the question of whether SES and climate are themselves closely correlated. When all classes were included in the analyses, this relationship is positive but not significant: $r = .36$, $p>.05$. When the extreme outlier class was removed from the analysis, the correlation between SES and classroom climate drops close to zero ($r = .06$, $p>.05$). This means that the climate of the classroom was not associated with the SES level of the school: Some teachers in lower SES schools created very positive environments, and some teachers in higher SES schools created less positive environments.

In order to examine further the relative contribution of SES and climate to the prediction of student beliefs, a stepwise multiple regression procedure was conducted. Because of the influence of the extreme outlier class on the correlations, that class was dropped from the regression analyses. Table 1 presents the results, which suggest that classroom climate is an important

predictor of student beliefs, with SES held constant. However, SES cannot be ignored as a predictor as well. These results suggest that classroom-level measures of task-related beliefs may be lower in schools where more students are from very poor homes, but this does not deny the importance of the classroom climate as an equally strong predictor of student belief scores.

Table 1

Regression of Students' Task-Related Beliefs on Socioeconomic Status and Classroom Climate

Step	Predictors Entered	Multiple R	Adjusted R Square	F for Model	df	p	Beta	
1	Climate	.51	.22	5.75	1,16	.05	(Climate)	.51
2	Climate + SES	.70	.42	7.26	2,15	.01	(Climate) (SES)	.49 .48

These findings about climate are correlational, not causal, and could as easily reflect the influence of student beliefs on classroom climate as the other way around; that is, perhaps it is easier to maintain a classroom where affect, task motivation, and self-regulation are high when the students already hold certain task-related beliefs. In contrast, perhaps the students' beliefs are affected by the climate established and maintained by the teacher. Before studies can be done about possible causal mechanisms, more must be known about the ways in which classroom task environments are established and maintained.

The remainder of this results section presents qualitative descriptions of some classrooms that differed from one another in their climate and student belief ratings. These descriptive data reveal more details than the general climate ratings can about how the classrooms were run and about ways

that teachers might contribute to the development of students' task-related beliefs.

Qualitative Descriptions of Classrooms

As described earlier, case descriptions were organized around two dimensions that both initial analyses and other research suggested might be related to students' beliefs. In most cases, although not all, classrooms that had received higher ratings on the general climate scales and on the composite rating of student beliefs were characterized in similar ways with the two dimensions. Similarly, classes that received lower ratings on both climate and student beliefs were perceived in similar ways when analyzed with the two dimensions.

The first dimension was *the extent to which teachers structured information about the environment to render it predictable and comprehensible*. Sociolinguistic research in classrooms (e.g., Cazden, 1985; Florio-Ruane, 1987) has highlighted the important role of rule-governed communication and the ways that classroom interactions can break down when students' understandings of appropriate responses differ from the teacher's understanding. Students, especially those from cultural backgrounds different from the teacher, must infer what are appropriate, acceptable, and worthwhile responses to classroom demands. In this study, one of the most important features of highly rated classrooms was the teacher's role in reducing the inference burden on students. Teachers in the highly rated classrooms deliberately and explicitly presented information that would aid the child in constructing the desired understanding about the classroom and ways of responding to task demands.

Teacher structuring of information included provision of procedural details but was by no means limited to this domain. Teachers in highly rated

classrooms also provided much information about how appropriate behavior varied across contexts. For example, one teacher explicitly told students, "During morning work time, the rule for talking is quiet whispering if you're helping one another. During our silent reading time, you should be silent." Teachers pointed out regular patterns ("We will always have silent reading after lunch this year") as well as reasons for exceptions that rendered them logical to students ("Today will be different because we have to be in the gym at 10:00 for pictures"). Consistency in following through on their predictions and rules was also apparent and was an important source of information for the children. Teachers also structured information by explicitly linking ideas: relating examples of specific rules to broader principles, relating an incident today to a similar incident last week and discussing the underlying commonality, and relating rules and rationales or consequences.

The second dimension that emerged as important complemented the first one, because it created purposes for students to use their knowledge about the classroom and tasks. This second dimension was the *frequency of opportunities to self-regulate task activity*. Teachers in highly rated classrooms created opportunities for students to monitor themselves during task performance while still holding them accountable for task completion This was done by allowing some choices within limits, not by abdicating all monitoring responsibility to students. Sometimes, such opportunities were built into regular routines for work accountability. The result was that the teacher was not the sole decision maker about what would be done at what time, in what order, and in what manner. Such opportunities were not always apparent in the first few days of school, but they became increasingly apparent across the school year.

Illustrative case descriptions. Space does not permit presentation of all descriptive data. Instead, summaries of two classrooms are presented below. These two classrooms received significantly different ratings for climate and student beliefs. The two teachers also differed in their structuring of information about the environment and the opportunities available to students for self-regulation.

Teacher A taught third grade in a school where 23% of the students were from families receiving AFDC. Students were bused to this school from a wide variety of neighborhoods, including some rural areas and some public housing developments. The composite rating of students' task-related beliefs was 5.0, one of only four classes to receive this high a rating. The climate ratings for affective tone, task tone, and self-regulation were 5.0, 4.7, and 4.7. The narratives revealed a classroom where teachers and students were respectful of one another, there was a great deal of humor, and students were frequently observed to be enthusiastic about a lesson presented by the teacher.

The teacher provided a great deal of information to the students about the standards in the classroom and how, when, and why they applied. This information was "structured" in the sense that the teacher made explicit connections between events, their antecedents and consequences, and expected student role, and she consistently followed through on her predictions, building credibility for her statements. This was especially evident during the first three weeks of school. For example, she said on the second morning of school, "Every morning when you come in, there will be math on the board for you to do," and then she followed through with this pattern throughout the year. Also on the second morning, she explained that the morning schedule would typically include movement between classes for reading, but that for

two weeks they would be doing something different, thus communicating to students about an exception to a regular pattern, rather than changing patterns after two weeks without warning. In several instances during the first few weeks, she noted students' progress and good behavior and linked their success to their own actions, making clear the links between cause and effect. Corrections or reminders were accompanied by explanations such as, "If you drop paste on the floor, please wipe it off well because someone could slip on it and get hurt."

As the year progressed, the classroom ran fairly smoothly, with students adept at moving from one event to another quickly. The work accountability system was clearly in evidence, and its consistent use was another example of structuring of information for the students in that consequences were predictable because the teacher enforced the system. For example, in one observation, students had a designated place to turn in certain assignments, and an aide immediately checked another assignment when completed. Before dismissal for lunch, the teacher collected all work and then called out the names of students who were finished and could leave for lunch. Throughout the year, the teacher provided a great deal of information about time to the students, such as pointing out how many minutes were left in the period to finish up work or saying to a student who appeared to be off task that his reading group would begin in five minutes. These time references focused students' attention on the salient feature of passing time, thus providing information that went beyond a correction of off-task behavior.

Although opportunities for self-regulation on school tasks were not very evident early in the year, the fall observations did reveal that procedures for drinking water, going to the bathroom, and sharpening pencils were in place and running smoothly without teacher permission. The teacher did

provide some choices in early fall assignments (e.g., names for a graph, symbols for a class map), and commented on student self-regulation when it occurred (e.g., "Jennie, I like the way you use your time," to a girl who had chosen to keep working on an assignment when others took a bathroom break. On another occasion, when a girl finished a reading assignment and resumed work on an earlier math paper, the teacher noticed and said, "Good . . . you're getting that morning math done. That's a good idea too.") Sometimes, the teacher would cue student behavior without explicitly telling students what to do, which might have been a way of easing them into more thinking for themselves (e.g., She held up a science book, saying, "If you see what I am holding up, you will know what to get ready for next").

By mid-year and the spring observations, there was more direct evidence that students were making task-related decisions and functioning independently. For example, students spontaneously began their assigned classroom jobs. When doing morning math, students regularly chose where they wanted to sit and work. For some other assignments, students could make choices about where to work and were allowed to go into the hall when they wanted to work with partners. Apparently, no management problems resulted from this. Students also had the option of joining a more advanced math group for instruction when they finished their regular assignments. During afternoons, students sometimes had a period for finishing work, and they independently monitored what they needed to do and in what order.

Many of the teacher's messages to students, especially corrections, relayed the message that they had choices and could control themselves. For example, she said to a boy who had been inattentive in reading group, "Go to your seat and put your head down. When you really want to listen, you can come back." In several ways, the teacher conveyed expectations and

opportunities for students to make informed choices about how they would meet task demands in her classroom. This occurred within an environment where relationships were warm, humor was frequent and students were not at-risk for failure on tasks (because the teacher provided them with adequate information about the tasks and the accountability system).

Like Teacher A, *Teacher B* taught third grade in a school with a similar SES level, where 27% of the students were from homes where AFDC was received. Unlike Teacher A's school, Teacher B's school drew students from the immediate neighborhood, which contained an ethnically mixed population. Teacher B's ratings for climate and student beliefs were lower than Teacher A's. In Teacher B's class, the composite rating for students' task-related beliefs was 1.7, the third lowest rating. The classroom's ratings on affective tone, task tone, and self-regulation were 2.5, 2.7, and 3.0. The narratives reveal a classroom where (a) there was a fair amount of teacher nagging and irritation (although she also had moments of warmth toward the children), (b) some students received a larger share of public criticism than other children, (c) there was occasional tattling and squabbling, and (d) students' level of task orientation was moderate at best. Tasks were generally taken from commercial materials and there was frequent seatwork.

Teacher B also differed from Teacher A in that she was less likely to structure information for students to make the classroom predictable. For example, by the end of the first day of school, the teacher had demonstrated inconsistency in following through on corrections. She commented several times on lines that were not straight and students who were talking, but did little that prevented further occurrences of the same behavior. This pattern continued throughout the first few weeks of school. There were occasions when her own predictions about how time would be spent were inaccurate,

either due to poor planning or poor management or both. For example, on the first afternoon, the class was 10 minutes late leaving the building because the teacher ran overtime with announcements and clean-up and then stopped the group four times as they walked to the door because their line was not straight. During the first few weeks, there were few work-related procedures in operation with resulting delays in beginning lessons. The teacher made very few statements about why, how, and when to apply standards, and instead most of her communications were corrections, often in a nagging tone, about student behavior.

During the rest of the year, the teacher continued to focus on student misbehavior rather than providing information to help students understand rationales for and ways of meeting standards. However, by the spring narratives, there was a basic predictability to the room, so that it was not chaotic. A schedule was on the board and it was followed, and students seemed to be familiar with the usual course of events, which appeared to center around movement through commercial materials. However, no clear system existed for assigning classroom jobs, and the accountability system for task completion was not clear. For example, one afternoon, at 1:20, the teacher told students that if they weren't finished, they would have to finish at recess or take the work home. However, at the end of the day, she announced that two students would have to stay after school because they had not finished their work.

Teacher B's classroom also differed from Teacher A's class in the opportunities for task-related self-regulation. During the fall observations, the activities were primarily teacher-directed, with few opportunities for the students to make decisions and take responsibility for task performance or classroom maintenance. The teacher was the primary task monitor,

and she delivered frequent corrections to students for their behavior without providing the procedural systems that would have facilitated student independence. Instead, the lack of procedures sometimes necessitated teacher-regulation, such as telling students to return to their seats after calling them to the reading group because they did not have pencils.

During the spring observations, this pattern of teacher-direction was still apparent. No systems were apparent for students to find their assignments, make choices about how and where to work, or do any self-evaluation of work. Thus, the students in Teacher B's classroom carried out their tasks in an environment in which the teacher spent a lot of time correcting student behavior, without providing students with either the information or the opportunities that might have enabled them to meet task demands independently and successfully.

These two teachers represent only 2 out of 19 for whom narrative data are available. However, the patterns demonstrated by these two cases hold up across many of the other 17 cases, and the patterns especially hold up for the extreme groups that received very high (above 4.5) or very low (below 2.0) ratings on students' task-related beliefs. The teachers within the extreme groups differed in some ways. Not all of the highly rated classes were as warm and cheerful as Teacher A's, but all were places where students were treated with respect and where students were given adequate information and opportunities for independent task-performance. Not all of the teachers whose classes received low ratings had as many management problems as Teacher B. In fact, one of the classes with very low ratings was a very controlled classroom, but one in which the teacher controlled all task activity, giving students very little information about how, when, and why to meet task standards and very few opportunities for making any task-related decisions. In

this same class, students were frequently scolded for off-task behavior or failure to complete tasks in the allotted time.

There was one anomalous classroom that received fairly high climate ratings (4.0, 4.2, and 4.0) and whose teacher appeared to provide a fair amount of structuring of information and opportunities, but whose students were rated fairly low for their task-related beliefs (the rating was 2.0, the fourth lowest score). This classroom did include two students who were highly disruptive during the year and whose disruptions were not always stopped quickly. Perhaps a few students can effectively prevent a teacher from creating the desired task environment, in spite of the teacher's best efforts. It is likely that there are other important dimensions not tapped in these analyses that also determine students' task-related beliefs, including school and community factors or experiences in preceding classes. At any rate, this anomalous classroom suggests caution in interpretation of the data, in spite of the consistent patterns found among the other classrooms in the sample.

Discussion

The findings reported here are important because they suggest that students' task-related beliefs are subject to teaching effects and are therefore malleable. These results are congruent with other studies in which student beliefs about themselves as task performers were related to the task environment created by teachers (Marshall & Weinstein, 1984; 1986) and to the beliefs held by teachers about the importance of student autonomy (Deci et al., 1981).

The two dimensions associated with highly rated classrooms--structuring information and providing opportunities for self-regulation--are supported by other research, especially the parental socialization literature (Maccoby & Martin, 1983). Classroom research congruent with the study described here

includes the classroom management literature, which emphasizes the importance of teachers presenting rules and procedures clearly and consistently enforcing them, although this research examines only student behavioral outcomes, such as time on task (Brophy, 1983; Emmer, Evertson, & Anderson, 1980). In the present study, teachers in the highly rated classrooms shared some characteristics with the "effective managers" in earlier studies, but they also went beyond the management practices associated with maximizing student time on task and taught as if they wanted students to understand how, why, and when task behavior was relevant. The present data suggest that "effective management," as traditionally conceived, is necessary but not sufficient for teachers to influence the development of students' beliefs about tasks and about themselves as task performers.

Working Hypotheses About How Teaching Practice Might Influence the Development of Students' Task-related Beliefs

The data reported here are descriptive and correlational and do not explain how or why these two dimensions of teaching practice might affect student outcomes. However, the following causal model is offered as speculation that may inform further research about ways that teachers affect students' beliefs.

This model is based on the work of several researchers who have argued that students' perceptions of environmental contingencies are the basis for other desirable beliefs. For example, Harter and Connell (1984) suggested that a key determinant of the self-perception measures used in this study is students' beliefs that they know what controls outcomes, which implies a belief that events are predictable and can be attributed to consistent causes. Weisz and Stipek (1982) and Weisz and Cameron (1986) also suggested that the development of effective self-perceptions depends on first recognizing

contingencies within the environment and then recognizing that one is personally competent enough to set contingencies into motion. Similarly, Skinner and Connell (1986) argue that "control understanding" is determined by contingent, sensitive environments in which individuals receive clear information regarding the consequences of actions and in which the individual's intentions and feelings are taken into account.

Interpretation of data from the study reported here has attempted to take these perspectives into account and propose the following model as one way that teachers help students learn about contingencies, control, and competence. If the two dimensions described above are significant determinants of student beliefs, the causal mechanisms might work in the following manner.

Before students can perceive a consistent source of control over task outcomes, they must perceive predictability in the task environment; that is, the student must accept that the task environment is rational and that the student has the necessary knowledge to explain events. This means that events have meaning, in that they are part of a consistent network of cause-effect, sequential, or hierarchical relationships. It must "make sense" to students that, for example, their efforts on tasks lead to success, that the teacher disapproves of certain behavior because of its effects on others' task performance, or that they must practice multiplication facts in order to become more facile when engaged in problem-solving.

When teachers explicitly structure information about the task environment that focuses students' attention on predictable and sensible relationships, they are contributing to students' knowledge about contingencies and, thus, their sense of what controls outcomes. Once knowledge of control is established, then it is necessary for teachers to provide the expectations and opportunities for students to practice self-regulation of task performance.

Thus, once students know that task performance outcomes have reasonable explanations, then they can learn that they themselves are important causal influences (i.e., they begin to develop an internal locus of control). When practice in self-regulation is successful (which requires skillful selection and presentation of tasks by the teacher), students see that they are indeed the cause of successful performance, and then self-perceived competence may also increase.

The design of the study reported here limited the amount of data that could be obtained in any given classroom and therefore limits the extent to which this model can be tested. In order to test the model, an intensive study of fewer classrooms would be necessary. Further research could focus more closely on ways that teachers establish task environments and how their students' task-related beliefs change over the school year. Of particular interest would be the ways that teachers blend and balance the two dimensions over the school year and with different students. Some students require more information than other students to focus their attention on contingencies, especially at the beginning of the year or in new situations throughout the year; some students are ready before other students to act on opportunities for self-regulation.

Clearly, teachers such as Teacher A are making complex decisions about task demands for the group as a whole as well as how to adjust these demands in order to meet the needs of individual students for information and for opportunity. These decisions are part of the activity glibly referred to in this paper as "creating and maintaining a task environment." If further research could make more explicit how such teaching decisions are related to the development of students' beliefs throughout the school year, it would contribute greatly to our understanding of the process whereby students learn how to do tasks in schools.

References

Anderson, L., & Prawat, R. (1986). Socialization Outcomes. In Institute for Research on Teaching Final Report, September 30, 1986 (Section G). East Lansing: Michigan State University, Institute for Research on Teaching.

Brophy, J. (1983). Classroom management and organization. Elementary School Journal, 83, 265-285.

Cazden, C. (1985). Classroom discourse. In M. C. Wittrock (Ed.), Handbook of Research on Teaching (3rd. ed., pp. 432-463). New York: Macmillan.

Connell, J. (1985). A new multidimensional measure of children's perceptions of control. Child Development, 56, 1019-1041.

Deci, E., Schwartz, A., Sheinman, L., & Ryan, R. (1981). An instrument to assess adults' orientations toward control versus autonomy with children: Reflections on intrinsic motivation and perceived competence. Journal of Educational Psychology, 73, 642-650.

Doyle, W. (1983). Academic work. Review of Educational Research, 53, 159-199.

Dweck, C. (1986). Motivational processes affecting learning. American Psychologist, 41, 1040-1048.

Emmer, E., Evertson, C., & Anderson, L. (1980). Effective management at the beginning of the school year. Elementary School Journal, 80, 219-231.

Florio-Ruane, S. (1987). Sociolinguistics for educational researchers. American Educational Research Journal, 24, 185-197.

Harter, S. (1981a). A model of mastery motivation in children: Individual differences and developmental change. Minnesota Symposia on Child Psychology (Vol. 14, pp. 215-255). Hillsdale, NJ: Erlbaum.

Harter, S. (1981b). A new self-report scale of intrinsic versus extrinsic orientation in the classroom: Motivational and informational components. Developmental Psychology, 17, 300-312.

Harter, S. (1982). The perceived competence scale for children. Child Development, 53, 87-97.

Harter, S., & Connell, J. (1984). A model of the relationship among children's academic achievement and their self-perceptions of competence, control, and motivational orientation. In J. Nicholls (Ed.), The development of achievement motivation (pp. 219-250). Greenwich, CT: JAI.

Maccoby, E., & Martin, J. (1983). Socialization in the contexts of the family: Parent-child interaction. In E. M. Hetherington (Ed.), Handbook of child psychology: Vol. 4. Socialization, personality, and social development (pp. 37-56). New York: Wiley.

Marshall, H., & Weinstein, R. (1986). Classroom context of student-perceived differential teacher treatment. Journal of Educational Psychology, 78, 441-454.

Marshall, H., & Weinstein, R. (1984). Classroom factors affecting students' self-evaluations: An interactional model. Review of Educational Research, 54, 301-325.

Prawat, R., Anderson, D., Anderson, A., Jenkins, F., & Anderson, L. (1983, April) The development of an instrument to measure teacher goal orientations. Paper presented at the annual meeting of the American Educational Research Association, Montreal.

Skinner, E., & Connell, J. P. (1986). Control understanding: Suggestions for a developmental framework. In M. M. Baltes & P. B. Baltes (Eds.), The psychology of control and aging. Hillsdale, NJ: Erlbaum.

Wang, M. C. (1982). Development and consequences of students' sense of personal control. In J. Levine & M. C. Wang (Eds.), Teacher and student perceptions: Implications for learning. Hillsdale, NJ: Erlbaum.

Weinstein, R. H. (1983). Student perceptions of schooling. Elementary School Journal, 83, 287-312.

Weisz, J., & Cameron, A. (1986). Individual differences in the student's sense of control. In C. Ames & R. Ames (Eds.), Research on motivation in education: Vol. 2. The Classroom Milieu. New York: Academic Press.

Weisz, J., & Stipek, D. (1982). Competence, contingency, and the development of perceived control. Human Development, 25, 250-281.

Wittrock, M. C. (1986). Students' thought processes. In M. C. Wittrock (Ed.), Handbook of Research on Teaching, (3rd. ed., pp. 297-314). New York: Macmillan.